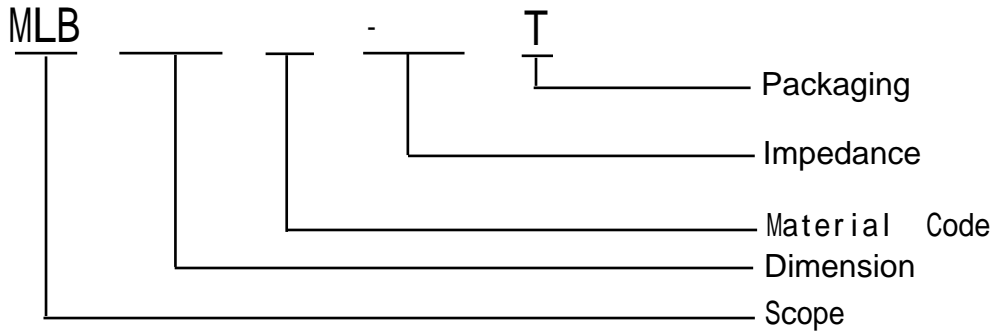


1. Scope

This specification applies to MLB-F Series of multi-layer ferrite chip bead.

2. Product Description and Identification (Part Number)

- 1) Description:
MLB-F Series of multi-layer ferrite chip bead.
- 2) Product Identification (Part Number)



3. Rating

Operating Temperature: $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

Storage Temperature: $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (after PCB)

$-5^{\circ}\text{C} \sim 40^{\circ}\text{C}$, Humidity 40% ~ 70% (before PCB)

4. Shape and Dimensions

- 1) Dimensions and recommended PCB pattern for reflow soldering: See Fig.4-1, Fig.4-2 and Table 4-1.
- 2) Structure: See Fig. 4-3 and Fig. 4-4.

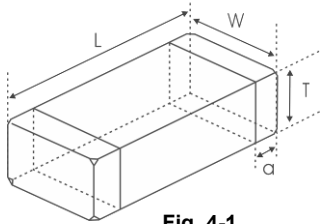


Fig. 4-1

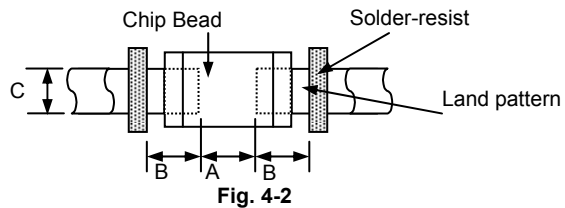


Fig. 4-2

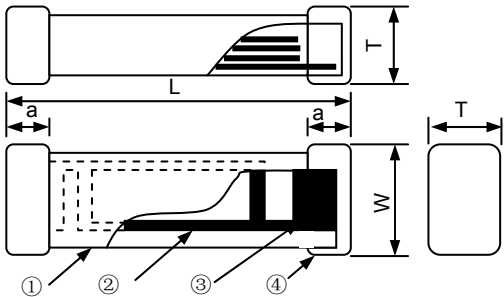


Fig. 4-3

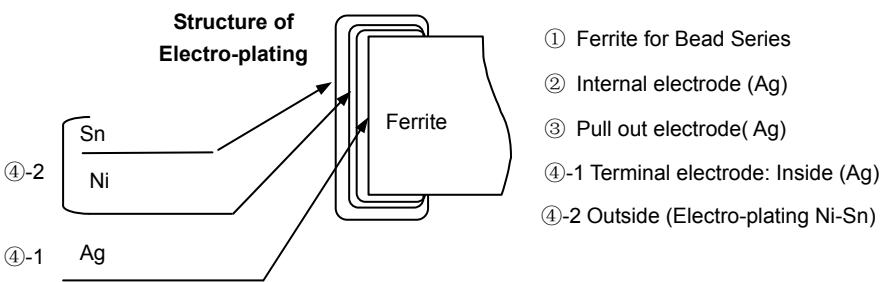


Fig. 4-4

- ① Ferrite for Bead Series
- ② Internal electrode (Ag)
- ③ Pull out electrode (Ag)
- ④-1 Terminal electrode: Inside (Ag)
- ④-2 Outside (Electro-plating Ni-Sn)

[Table 4-1]

Unit: mm [inch]

| Type | L | W | T | a | A | B | C |
|----------------|--|-----------------------------------|-----------------------------------|-----------------------------------|-----------|-----------|-----------|
| 0603 [0201] | 0.6 ± 0.05 [.024 ± 0.002] | 0.3 ± 0.05 [.012 ± 0.002] | 0.3 ± 0.05 [.012 ± 0.002] | 0.15 ± 0.05 [.006 ± 0.002] | 0.2~0.3 | 0.2~0.3 | 0.3~0.35 |
| 1005 [0402] | 1.0 ± 0.15 [0.039 ± 0.006] | 0.5 ± 0.15 [0.020 ± 0.006] | 0.5 ± 0.15 [0.020 ± 0.006] | 0.25 ± 0.1 [0.010 ± 0.004] | 0.45~0.55 | 0.40~0.50 | 0.45~0.55 |
| 1608 [0603] | 1.6 ± 0.15 [0.063 ± 0.006] | 0.8 ± 0.15 [0.031 ± 0.006] | 0.8 ± 0.15 [0.031 ± 0.006] | 0.3 ± 0.2 [0.012 ± 0.008] | 0.60~0.80 | 0.60~0.80 | 0.60~0.80 |
| 2012 [0805] | $2.0 (+0.3, -0.1)$ [0.079 (+0.012, -0.004)] | 1.25 ± 0.2 [0.049 ± 0.008] | 0.85 ± 0.2 [0.033 ± 0.008] | 0.5 ± 0.3 [0.020 ± 0.012] | 0.80~1.20 | 0.80~1.20 | 0.90~1.60 |
| 3216 [1206] | 3.2 ± 0.2 [0.126 ± 0.008] | 1.6 ± 0.2 [0.063 ± 0.008] | 0.85 ± 0.2 [0.033 ± 0.008] | 0.5 ± 0.3 [0.020 ± 0.012] | 1.80~2.50 | 1.00~1.50 | 1.20~2.00 |

Appendix A: Electrical Characteristics
I. MLB0603 Series of Beads

| Part Number | Impedance (Ω) | Z Test Freq. (MHz) | DCR (Ω) Max. | I _r (mA) Max. | Thickness (mm) [inch] |
|---------------|------------------------|-----------------------|--------------------------|-----------------------------|-------------------------------------|
| MLB0603F-300T | 30 \pm 25% | 100 | 0.35 | 300 | 0.3 \pm 0.05 [.012 \pm .002] |
| MLB0603F-600T | 60 \pm 25% | 100 | 0.40 | 200 | |
| MLB0603F-800T | 80 \pm 25% | 100 | 0.40 | 200 | |
| MLB0603F-121T | 120 \pm 25% | 100 | 0.80 | 200 | |
| MLB0603F-221T | 220 \pm 25% | 100 | 1.00 | 200 | |
| MLB0603F-601T | 600 \pm 25% | 100 | 1.70 | 200 | |

I. MLB1005 Series of Beads

| Part Number | Impedance (Ω) | Z Test Freq. (MHz) | DCR (Ω) Max. | I _r (mA) Max. | Thickness (mm) [inch] |
|---------------|------------------------|-----------------------|--------------------------|-----------------------------|-------------------------------------|
| MLB1005F-000T | 0~10 | 100 | 0.05 | 500 | 0.5 \pm 0.15 [.020 \pm .006] |
| MLB1005F-100T | 7~15 | 100 | 0.05 | 500 | |
| MLB1005F-300T | 30 \pm 25% | 100 | 0.20 | 300 | |
| MLB1005F-310T | 31 \pm 25% | 100 | 0.20 | 300 | |
| MLB1005F-470T | 47 \pm 25% | 100 | 0.25 | 300 | |
| MLB1005F-600T | 60 \pm 25% | 100 | 0.30 | 300 | |
| MLB1005F-700T | 70 \pm 25% | 100 | 0.30 | 200 | |
| MLB1005F-800T | 80 \pm 25% | 100 | 0.35 | 200 | |
| MLB1005F-101T | 100 \pm 25% | 100 | 0.40 | 200 | |
| MLB1005F-121T | 120 \pm 25% | 100 | 0.40 | 200 | |
| MLB1005F-181T | 180 \pm 25% | 100 | 0.45 | 150 | |
| MLB1005F-221T | 220 \pm 25% | 100 | 0.45 | 150 | |
| MLB1005F-241T | 240 \pm 25% | 100 | 0.50 | 150 | |
| MLB1005F-301T | 300 \pm 25% | 100 | 0.50 | 100 | |
| MLB1005F-331T | 330 \pm 25% | 100 | 0.50 | 100 | |
| MLB1005F-421T | 420 \pm 25% | 100 | 0.60 | 100 | |
| MLB1005F-501T | 500 \pm 25% | 100 | 0.80 | 100 | |
| MLB1005F-601T | 600 \pm 25% | 100 | 0.90 | 100 | |
| MLB1005F-751T | 750 \pm 25% | 100 | 1.00 | 100 | |
| MLB1005F-102T | 1000 \pm 25% | 100 | 1.20 | 100 | |
| MLB1005F-152T | 1500 \pm 25% | 100 | 1.60 | 100 | |
| MLB1005F-182T | 1800 \pm 25% | 100 | 1.80 | 100 | |

II. MLB1608 Series of Beads

| Part Number | Impedance (Ω) | Z Test Freq. (MHz) | DCR (Ω) Max. | I _r (mA) Max. | Thickness (mm) [inch] |
|---------------|------------------------|-----------------------|--------------------------|-----------------------------|-------------------------------------|
| MLB1608F-000T | 0~7 | 100 | 0.05 | 1000 | 0.8 \pm 0.15 [.031 \pm .006] |
| MLB1608F-070T | 0~11 | 100 | 0.05 | 1000 | |
| MLB1608F-100T | 7~15 | 100 | 0.05 | 1000 | |
| MLB1608F-150T | 9~21 | 100 | 0.05 | 800 | |
| MLB1608F-300T | 30 \pm 25% | 100 | 0.10 | 600 | |
| MLB1608F-310T | 31 \pm 25% | 100 | 0.10 | 600 | |
| MLB1608F-470T | 47 \pm 25% | 100 | 0.10 | 600 | |
| MLB1608F-600T | 60 \pm 25% | 100 | 0.20 | 600 | |
| MLB1608F-800T | 80 \pm 25% | 100 | 0.20 | 600 | |
| MLB1608F-101T | 100 \pm 25% | 100 | 0.20 | 500 | |
| MLB1608F-121T | 120 \pm 25% | 100 | 0.20 | 500 | |
| MLB1608F-151T | 150 \pm 25% | 100 | 0.30 | 400 | |
| MLB1608F-221T | 220 \pm 25% | 100 | 0.30 | 400 | |
| MLB1608F-301T | 300 \pm 25% | 100 | 0.35 | 300 | |
| MLB1608F-471T | 470 \pm 25% | 100 | 0.50 | 300 | |
| MLB1608F-501T | 500 \pm 25% | 100 | 0.50 | 300 | |
| MLB1608F-601T | 600 \pm 25% | 100 | 0.50 | 300 | |
| MLB1608F-801T | 800 \pm 25% | 100 | 0.60 | 250 | |
| MLB1608F-102T | 1000 \pm 25% | 100 | 0.60 | 250 | |
| MLB1608F-122T | 1200 \pm 25% | 100 | 0.85 | 200 | |

II. MLB1608 Series of Beads

| Part Number | Impedance (Ω) | Z Test Freq. (MHz) | DCR (Ω) Max. | I _r (mA) Max. | Thickness (mm) [inch] |
|---------------|------------------------|-----------------------|--------------------------|-----------------------------|--------------------------|
| MLB1608F-152T | 1500±25% | 100 | 0.85 | 200 | 0.8±0.15 [.031±.006] |
| MLB1608F-182T | 1800±25% | 100 | 1.10 | 100 | |
| MLB1608F-202T | 2000±25% | 100 | 1.10 | 100 | |
| MLB1608F-222T | 2200±25% | 100 | 1.20 | 100 | |
| MLB1608F-252T | 2500±25% | 100 | 1.20 | 100 | |
| MLB1608F-272T | 2700±25% | 100 | 1.30 | 100 | |

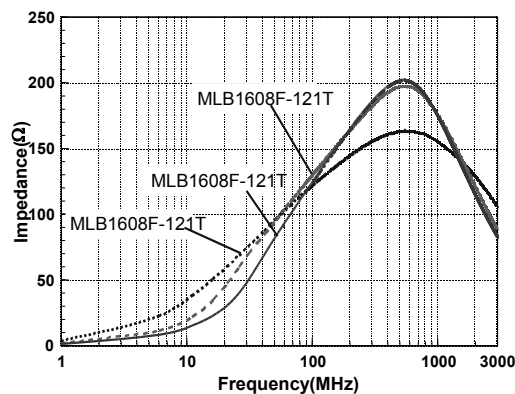
III. MLB2012 Series of Beads

| Part Number | Impedance (Ω) | Z Test Freq. (MHz) | DCR (Ω) Max. | I _r (mA) Max. | Thickness (mm) [inch] |
|---------------|------------------------|-----------------------|--------------------------|-----------------------------|--------------------------|
| MLB2012F-000T | 0~7 | 100 | 0.08 | 1500 | 0.85±0.2 [.033±.008] |
| MLB2012F-050T | 0~11 | 100 | 0.08 | 1500 | |
| MLB2012F-100T | 7~15 | 100 | 0.10 | 1000 | |
| MLB2012F-220T | 22±25% | 100 | 0.10 | 1000 | |
| MLB2012F-300T | 30±25% | 100 | 0.10 | 1000 | |
| MLB2012F-470T | 47±25% | 100 | 0.15 | 900 | |
| MLB2012F-600T | 60±25% | 100 | 0.15 | 900 | |
| MLB2012F-700T | 70±25% | 100 | 0.15 | 800 | |
| MLB2012F-800T | 80±25% | 100 | 0.18 | 800 | |
| MLB2012F-101T | 100±25% | 100 | 0.18 | 800 | |
| MLB2012F-121T | 120±25% | 100 | 0.18 | 800 | |
| MLB2012F-151T | 150±25% | 100 | 0.20 | 500 | |
| MLB2012F-181T | 180±25% | 100 | 0.20 | 500 | |
| MLB2012F-221T | 220±25% | 100 | 0.20 | 500 | |
| MLB2012F-301T | 300±25% | 100 | 0.25 | 400 | |
| MLB2012F-331T | 330±25% | 100 | 0.25 | 400 | |
| MLB2012F-391T | 390±25% | 100 | 0.30 | 400 | |
| MLB2012F-421T | 420±25% | 100 | 0.30 | 400 | |
| MLB2012F-471T | 470±25% | 100 | 0.35 | 300 | |
| MLB2012F-501T | 500±25% | 100 | 0.35 | 300 | |
| MLB2012F-601T | 600±25% | 100 | 0.35 | 300 | |
| MLB2012F-801T | 800±25% | 100 | 0.40 | 300 | |
| MLB2012F-102T | 1000±25% | 100 | 0.35 | 300 | |
| MLB2012F-122T | 1200±25% | 100 | 0.60 | 200 | |
| MLB2012F-152T | 1500±25% | 100 | 0.70 | 200 | |
| MLB2012F-182T | 1800±25% | 100 | 0.80 | 200 | |
| MLB2012F-202T | 2000±25% | 100 | 0.90 | 100 | |
| MLB2012F-222T | 2200±25% | 100 | 0.90 | 100 | |
| MLB2012F-252T | 2500±25% | 100 | 1.20 | 100 | |
| MLB2012F-272T | 2700±25% | 100 | 1.30 | 100 | |

IV. MLB 3216 Series of Beads

| Part Number | Impedance (Ω) | Z Test Freq. (MHz) | DCR (Ω) Max. | Ir (mA) Max. | Thickness (mm) [inch] |
|---------------|------------------------|-----------------------|--------------------------|-----------------|--------------------------|
| MLB3216F-000T | 0~15 | 100 | 0.03 | 2200 | 0.85±0.2 [.033±.008] |
| MLB3216F-100T | 0~15 | 100 | 0.03 | 2200 | |
| MLB3216F-220T | 22±25% | 100 | 0.05 | 2000 | |
| MLB3216F-300T | 30±25% | 100 | 0.05 | 2000 | |
| MLB3216F-310T | 31±25% | 100 | 0.05 | 2000 | |
| MLB3216F-500T | 50±25% | 100 | 0.10 | 1000 | |
| MLB3216F-600T | 60±25% | 100 | 0.10 | 1000 | |
| MLB3216F-800T | 80±25% | 100 | 0.10 | 1000 | |
| MLB3216F-900T | 90±25% | 100 | 0.10 | 1000 | |
| MLB3216F-101T | 100±25% | 100 | 0.10 | 1000 | |
| MLB3216F-121T | 120±25% | 100 | 0.10 | 1000 | |
| MLB3216F-181T | 180±25% | 100 | 0.20 | 600 | |
| MLB3216F-221T | 220±25% | 100 | 0.20 | 600 | |
| MLB3216F-301T | 300±25% | 100 | 0.20 | 600 | |
| MLB3216F-331T | 330±25% | 100 | 0.20 | 600 | |
| MLB3216F-391T | 390±25% | 100 | 0.25 | 600 | |
| MLB3216F-471T | 470±25% | 100 | 0.30 | 600 | |
| MLB3216F-501T | 500±25% | 100 | 0.30 | 600 | |
| MLB3216F-601T | 600±25% | 100 | 0.30 | 600 | |
| MLB3216F-801T | 800±25% | 100 | 0.35 | 500 | |
| MLB3216F-102T | 1000±25% | 100 | 0.60 | 500 | |
| MLB3216F-122T | 1200±25% | 100 | 0.70 | 300 | |
| MLB3216F-152T | 1500±25% | 100 | 0.80 | 200 | |
| MLB3216F-202T | 2000±25% | 100 | 1.00 | 100 | |
| MLB3216F-252T | 2500±25% | 100 | 1.20 | 100 | |
| MLB3216F-272T | 2700±25% | 100 | 1.50 | 100 | |

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